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6. *The Contents of ſome* Letters *from* Two *learned and curious* Obſervers *in* Staffordſhire, *concerning the* Sand *found in the* Brine *of the* Saltworks *of that* Country &c. *ſent to the* Royal Society *by* Dr. Rob. Plot. S. R. S.

HAving had occaſion about half a year ſince to conſider the *Brines* whereof we make our *white Salt* here in *England*, and more particularly thoſe of *Staffordſhire*; I conſulted amongſt others that inſtructive diſcourſe of Mr. *John Collins* concerning *Salt* and *Fiſhery* then newly publiſh't; wherein finding *Pag.* 52. that thoſe great quantities of *Sand* met with in all Brines, whether of *Pits*, made of *Sea liquor*, or by melting of *forreign Salts*, are not in the *Brines* before they are boyled, but produced by a ſort of *petrification* during the *Evaporation*; which He confirmes by the Experiment of ſtrong *Brines* having been dreyned or ſqueezed through moſt pure fine *Holland* of eight foldings, and no ſymptoms of any *Sand* being left in the *Filtre*: I thought it of concern to me (though then at a great diſtance my ſelf) to have the *Experiment* repeated upon the *Staffordſhire Brine*, not only becauſe of the particular account I was then giving of it, but rather for the ſake of the great quantities of *Sand* I knew to come from that *Brine*, which I was inclin'd to believe would either quite overthrow, or mightily confirm the truth of that odd *Phænomenon*. Whereupon I made bold to requeſt the aſſiſtance of two *Curious Obſervers*, Neighbors to

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to theſe *Brine-pits*, to make the *Experiment*, who were ſo very nice in performing it, that to the eight folds of fine *Holland*, they added as many more of fineſt *Cambrick*, through both which though they ſtrained a competent Quantity of the *brine*, yet found nothing left in this very cloſe *Colander*, but a little black *duſt*, which they imputed only to the foulneſs of the *Water*, it being nothing like *Sand*; for having examin'd the *Cloath* both with their *fingers* and the *Microſcope*, they could feel or ſee no more of *Sand* than if they had percolated the cleareſt Spring water; and yet this *brine* is found to hold in boyling at leaſt ¼ of as much *Sand* as *Salt*. *i. e.* the *Brine* that ſuffices to make a buſhel of *Salt*, yeilds alſo at leaſt a Peck of *Sand*.

But notwithſtanding this *Experiment*, it did not ſeem to their apprehenſions neceſſary that the *Sand* ſhould be generated in the boyling, but might rather be originally there; for before they ſtrained it, they obſerved in the water (by the help of a *Microſcope*) a great multitude of very minute *Animals* (much ſmaller than thoſe in *pepper-water*) ſwiming about in it, together with many ſmall tranſparent *plates*, ſome of them a little bigger than the *Animalcle's*, and ſome leſs, but all of a rectangular oblong figure, though ſome indeed ſeem'd very near a *Square*, which they found alſo in the *water* after ſtraining as thick as before. Nor did they wonder at it, becauſe the pores or rather interſtices between the threads of the *Holland* and *Cambrick*, though they were extreamly *fine*, appear'd in the *Microſcope* to be exceedingly (they affirm'd they might ſafely ſay twenty times) greater than either the *Animalcle's* or *Plates*. And theſe they judged to be the original *particles* both of the *Salt* and *Sand*, which as the *Water* evaporates in boyling they thought might gather together till they made up ſuch a viſible courſe body as we ſee the greater *Cornes* of each are. Wherein they were confirmed in a little time, for obſerving with an excellent *Microſcope*

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ſome of the ſtrong *Brine* which drops from the Baskets or *Barrows* when the *Salt* is firſt put into them, though at firſt it look't like clear water, yet upon a more accurate obſervation it appeared exceeding full of theſe *oblong particles*, which as they look't on them, they could ſenſibly perceive to gather together and club to make greater parts, and as the water dryed off from the *glaſs* to grow far larger and larger till they appeared as big, and not much unlike a large ſized *Table Diamond*: Which made them gueſs that the *Sand* might be alſo generated (if I may ſo ſay) after the ſame manner, it appearing to them to be nothing (pardon the expreſſion) but an inſipid *Salt* compoſed of parts not ſo *ſharp pointed* as the other, but rounder and blounter angled, and conſequently not ſo *pungent* on the *Tongue*. Which point they believed might be cleared perfectly if ſome of the *Sand* were diſſolved in fair water, and that water examined afterwards by ſtraining or otherwiſe to ſee if any, or all the *sand*, would be left behind &c.

Whereupon having ſome of the *Sand* by me I endeavoured accordingly to diſſolve it in fair water, to ſee whether I could reduce it again into its former ſtate, but without ſucceſs; its parts being ſo inſeparably fix't that they would by no means diſſolve: I alſo tryed the *Salt*, which though it diſſolved yet would not render it ſelf again into *plates*. Whereof ſending an account to my friends in *Staffordſhire*: they were pleaſed alſo to make a further trial of diſſolving the *Sand* ſeparated from the *Salt* in boyling; which though they confeſt they could not do to any conſiderable Quantity, yet they found that after the ſtraining, it was not ſo *heavy* by a great deal as before, the water that came from it being very clear, which made them believe that it did diſſolve in ſome meaſure, unleſs (as is very probable) there were in the *Sand* ſome particles of *Salt*, which upon diſſolution were ſeparated from it, and ſo render'd it lighter: Nevertheleſs they did not doubt but a great part of the *Sand* might alſo be diſſolved though perhaps no great quantity in *Pump-water* in which it ſeems they tryed it. But there has no further *Experiment* yet been made, wherefore if the *Royal Society* pleaſe to ſend me any *inſtructions* for a further tryal, they ſhall be carefully tranſmitted, and I dare promiſe them, as carefully executed. What thoſe *Gentlemens* opinions are concerning the *Animalcula* they do not tell me, what my own is concerning thoſe matters, it ſhall ſuffice in general to acquaint you that I think they may perhaps may be analogous to the *Eeles* in Vinegar, the reſt you muſt expect in my *Natural Hiſtory* of *Staffordſhire* now in the Preſs. I ſhall add no more but that one of the aforeſaid *Gentlemen* ſince the account above mentioned caſually looking upon ſome of the *Salt* made at thoſe *pits* before it was dryed and beaten ſmall, obſerved that many of the larger *Cornes* were of the ſame ſhape to the naked Eye, as the minute ones appear'd of in the *Microſcope*, and that they were viſibly made up of a great number of ſmall *plates*, ſhooting up from a quadrangular oblong *Baſe* into a very obtuſe *Pyramid*, hollowed within. Which is all at preſent but my duty to the *Society*, and that I am

Their moſt

Faithful

Servant,

R. P.